

atoms, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

13. (Amended) A multi-layer golf ball comprising:

a spherical solid core;

an inner cover layer molded over said spherical core to form a spherical intermediate ball, said inner cover layer comprising an ionomeric resin including about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a non-ionomeric elastomer selected from the group consisting of polyester elastomer, polyurethane and polyester amide, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

Remarks

Claims 1-13 remain pending in the present application. These claims, prior to the recent amendments, were previously rejected by the Examiner under 35 U.S.C. § 102(a) as being obvious and unpatentable over U.S. Patent No. 4,481,193 to Nesbitt in view of U.S. Patent No 5,068,151 to Nakamura. However, this rejection was reversed by the Board of Patent Appeals and Interferences ("the Board") in a Decision on Appeal dated September 17, 2001. In this regard, the Board stated:

The Nesbitt patent discloses a golf ball having inner and outer cover layers. The outer layer is made from a soft resinous material to enhance the playability characteristics of the ball (see column 1, lines 51-56 of the Nesbitt specification) similar to applicant's outer cover layer. Like appellant's inner cover layer, Nesbitt's inner cover layer is also made from an ionomeric resin to enhance the coefficient of restitution (see column 2, lines 59-62 of the Nesbitt specification).

However, according to the description on page 4 of appellant's specification, the examples of the ionomeric resins disclosed in Nesbitt to make the inner cover layer are not high acid ionomers and, instead, are low acid ionomers having an acid content equal to or less than 15%. The examiner has not challenged this description. Nor has the examiner challenged appellant's argument on page 5 of the main brief that the Nesbitt's ionomeric resins are low acid resins. Based on this record,

therefore, independent claims 1 and 13 differ from Nesbitt by reciting that the ionomeric inner cover layer has an acid content of at least 16%, and claim 13, the only other independent claim on appeal, differs from Nesbitt by reciting that the ionomeric inner cover layer has an acid content in the range from about 17% to about 25%.

The Nakamura reference discloses a golf ball having a single cover layer forming the outer covering of the ball. According to the Nakamura specification, the outer covering is made from an ionomeric resin having an acid content in the range extending from a low acid content of 10% by weight to a high acid content of 20% by weight. Nakamura thus lacks a teaching of providing an inner ionomeric cover layer in a two-ply cover with a high acid content. Just because high acid ionomers are known in the prior art, it does not necessarily follow that it would have been obvious to select such a material for the purpose of making Nesbitt's inner cover layer.

What is lacking in the cite prior art is a teaching or suggestion that an increase in the acid content in the inner ionomeric cover layer into the high acid range will increase the resilience of the golf ball. Lacking such a suggestion, the only way the examiner could have arrived at his conclusion of obviousness is through hindsight based on appellant's teachings. Hindsight analysis, however, is clearly improper. In re Deminski, 796 F.2d 436, 443, 230 USPQ 313, 316 (Fed. Cir. 1986). (Emphasis added)

Subsequent to the issuance of the Decision on Appeal, the present application containing claims 1-13 was allowed. Accordingly, Applicants then submitted payment of the issue fee and the formal drawings.

However, on or about June 20, 2002, the Office issued a Notice of Withdrawal From Issue Under 37 C.F.R. § 1.313(b). And, an Office Action was mailed on June 27, 2002 setting forth the reported reasons for withdrawal. Essentially, it was alleged that claims 1-13 were unpatentable under 35 U.S.C. § 103(a) in view of Nesbitt and a new reference, i.e., U.S. Patent No. 5,222,769 to Horiuchi et al., in substitution for Nakamura.

This response addresses that withdrawal and explains why all currently pending claims, i.e. claims 1-13 as amended, are patentable over the references cited and in condition for allowance.

A. The Rejections Under § 103

Specifically, the Office Action contained the following assertion as to why claims 1-13 were unpatentable:

Claims 1-5, 9-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nesbitt in view of Horiuchi et al. (Horiuchi). Nesbitt discloses the claimed invention with the exception of the particular materials utilized. However, one of ordinary skill in the art would, in view of Nesbitt's disclosure, recognize that other known materials could have been utilized in the invention so long as the cover comprised a harder inner layer overlaid by a softer outer layer. As disclosed by Horiuchi the use of high acid ionomers is known in the art. It would have been obvious to one of ordinary skill in the art to utilize the known materials disclosed by Horiuchi for their recognized advantages as noted by Horiuchi in the relationship suggested by Nesbitt to achieve a ball with such advantages.

Claims 6-8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the art as applied to claim 1 above, and further in view of Sullivan '814.

Nesbitt does not suggest his outer cover as being a blend of hard and soft ionomer. Blends of hard and soft ionomer are known to provide a balance of distance, spin, and durability not obtainable previously (see Sullivan Col. 3, lines 38-64). It would have been obvious to one of ordinary skill in the art to have used a blend of hard and soft ionomer as Nesbitt's outer cover for the expected results.

Pages 2-4 of Office Action mailed June 27, 2002.

1. The Claims are Patentable Over Nesbitt in View of Horiuchi et al.

Claims 1-5, 9-11 and 13 were alleged as being obvious over U.S. Patents 4,431,193 to Nesbitt in view of 5,222,739 to Horiuchi et al.

Claims 1-5 and 9-11, as amended, are directed to a golf ball comprising a core, an inner cover layer molded on the core, and an outer cover layer molded on the inner cover layer. All claims recite that the inner cover layer comprises a high acid ionomer including greater than 16% by weight of an alpha, beta-unsaturated carboxylic acid. And, all claims are directed to that golf ball having an outer cover in which the outer cover layer comprises a relatively soft polymeric material selected from the group consisting of low flexural modulus ionomer resins and non-ionomeric elastomers.

Each claim of this group recites specific aspects of this golf ball. For example, claim 2 recites the inner cover layer comprises a high acid ionomer resin comprising a copolymer of about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid.

Claim 3 recites the inner cover layer as comprising a high acid ionomer resin comprising a copolymer of about 18.5% to about 21.5% by weight of an alpha, beta-unsaturated carboxylic acid.

Claim 4 recites the inner cover layer having a thickness of from about 0.100 to about 0.010 inches, and the outer cover layer having a thickness of about 0.010 to about 0.050 inches. Claim 4 additionally recites the golf ball as having an overall diameter of 1.680 inches or more.

Claim 5 recites the inner cover layer as having a thickness of about 0.300 inches and the outer cover layer having a thickness of about 0.375 inches. Claim 5 additionally recites the golf ball having an overall diameter of 1.680 inches or more.

Claim 9 recites the non-ionomeric elastomer as a polyurethane.

Claim 10 recites the non-ionomeric elastomer as a polyester elastomer.

Claim 11 recites the non-ionomeric elastomer as a polyester amide.

Claims 12 and 13 recite a multi-layer golf ball comprising a solid core, an inner cover layer molded over the core to form an intermediate ball, and an outer cover layer molded on the intermediate ball to form the multi-layer golf ball. Claim 12 is directed to an acid content greater than 16% by weight. Claim 13 further recites that the inner cover layer comprises an ionomeric resin including about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi. Claim 13 further recites the outer cover layer as comprising a non-ionomeric elastomer selected from the group consisting of polyester elastomer, polyurethane, and polyester amide. Claim 13 further recites the outer cover layer as having a modulus in the range of from about 1,000 to about 30,000 psi.

U.S. Patent 4,431,193 to Nesbitt (representing the state of the art in 1981) generally describes a golf ball having a hard inner layer and a relatively soft outer cover layer. Although Nesbitt notes possible ionomeric resins for use in each of these layers, Nesbitt entirely fails to teach the particular aspects and combination of features recited in each of claims.

Specifically, Nesbitt fails to recite the inner cover layer as comprising a high acid ionomer resin, such as a copolymer of about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid, as recited in claim 2. Nesbitt also fails

to teach the inner cover layer as comprising a high acid ionomer resin comprising a copolymer of about 18.5% to about 21.5% by weight of an alpha, beta-unsaturated carboxylic acid, as recited in claim 3. Nesbitt also fails to teach the inner cover layer as having a thickness of from about 0.100 to about 0.010 inches, and the outer cover layer having a thickness of about 0.010 to about 0.05 inches, and further in combination with the ball having an overall diameter of 1.680 inches or more, as recited in claim 4. Nesbitt also fails to teach the inner cover layer as having a thickness of about 0.300 inches and the outer cover layer having a thickness of about 0.375 inches, and the ball having an overall diameter of 1.680 inches or more, as recited in claim 5. Nesbitt also fails to teach the non-ionomeric elastomer which may be used in an outer cover layer as a polyester polyurethane, as recited in claim 9. Nesbitt also fails to teach the non-ionomeric elastomer which may be used in the outer cover layer as a polyester elastomer such as recited in claim 10. Additionally, Nesbitt fails to teach the non-ionomeric elastomer which may be used in an outer cover layer as a polyester amide as recited in claim 11. Additionally, Nesbitt fails to teach a golf ball having an inner cover comprising an ionomeric resin including about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid having a modulus from about 15,000 to about 70,000 psi, and further in combination with the outer cover layer comprising a non-ionomeric thermoplastic selected from the group consisting of polyester elastomer, polyurethane, and polyester polyamide, and additionally in combination with the outer cover layer having a modulus in the range of from about 1,000 to about 30,000 psi, as recited in claim 13.

U.S. Patent 5,222,739 to Horiuchi et al. entirely fails to remedy the deficiencies of the '193 patent to Nesbitt. The '739 patent to Horiuchi et al., like the previous '151 patent to Nakamura, is directed to a single cover layer golf ball and not to a multi-layer ball as recited in all claims at issue. As the Board previously stated with respect to Nakamura:

The Nakamura reference discloses a golf ball having a single cover layer forming the outer covering of the ball. According to the Nakamura specification, the outer covering is made from an ionomeric resin having an acid content in the range extending from a low acid content of 10% by weight to a high acid content of 20% by weight. Nakamura thus lacks a teaching of providing an inner ionomeric cover layer in a two-ply cover with a high acid content. Just because high acid ionomers are known in

the prior art, it does not necessarily follow that it would have been obvious to select such a material for the purpose of making Nesbitt's inner cover layer.

What is lacking in the cited prior art is a teaching or suggestion that an increase in the acid content in the inner ionomeric cover layer into the high acid range will increase the resilience of the golf ball. Lacking such a suggestion, the only way the examiner could have arrived at his conclusion of obviousness is through hindsight based on appellant's teachings. Hindsight analysis, however, is clearly improper. In re Deminski, 796 F.2d 436, 443, 230 USPQ 313, 316 (Fed. Cir. 1986). (Emphasis added)

As such, Horiuchi et al., like the Board noted in Nakamura, entirely fails to teach or even suggest the many numerous aspects specifically recited in the pending claims.

Applicant respectfully submits that the Examiner has failed to make out a *prima facie* case of obviousness. Nesbitt, the primary reference, discloses a golf ball comprising a core and a multi-layer cover. The inner cover layer comprises a hard, high flexural modulus ionomer, and the outer cover layer comprises a soft, low flexural modulus ionomer. Nesbitt uses as examples Surlyn® 1605 and 1855 ionomers, high and low flexural modulus ionomers respectively. The golf balls of Nesbitt, when produced with an inner layer having a lower acid content, also have a substantially lower COR and worse cut resistance or durability than the golf balls of the present invention (see Tables 8 and 9, where the comparative examples of golf balls using the cover layers of Nesbitt). Nesbitt fails to disclose a multi-layer cover where the inner cover layer comprises a high acid ionomer containing at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and the outer cover layer comprises a relatively soft polymeric material selected from the group consisting of low flexural modulus ionomer resins and non-ionomeric elastomers.

Horiuchi is directed to a golf ball having a single layer cover comprising at least 20% of a carboxyl-rich ionomer resin prepared by neutralizing 15 to 80 mol % of carboxylic acid groups of an olefinic copolymer containing 16 to 30% by weight of an alpha, beta-ethylenic unsaturated carboxylic acid with monovalent or divalent metal ions. Horiuchi teaches using high acid ionomers in an outer cover layer rather than an inner cover layer. Additionally, as noted on page 15 of the specification, not all high acid ionomers are hard or produce high flexural modulus. Consequently, Applicant respectfully submits that there is no motivation, teaching or suggestion in Horiuchi to use high acid ionomer resins in

an inner cover layer. Instead, the only specific teaching in Horiuchi shows high acid ionomers in golf ball outer covers of two piece golf balls or wound balls having a single, outer cover layer.

Since, as discussed above, the primary reference, Nesbitt, is deficient because it fails to disclose a golf ball having an inner cover layer comprising a high acid ionomer containing at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and an outer cover layer comprising a relatively soft polymeric material selected from the group consisting of low flexural modulus ionomer resins and non-ionomeric elastomers, the addition of Horiuchi as a secondary reference does not cure this deficiency. Applicant respectfully submits that even if Horiuchi is combined with Nesbitt, Horiuchi, like Nakamura, is not directed to a golf ball having a high acid ionomer in the inner cover layer. Therefore, the resulting product would contain a high acid ionomer resin in the outer cover layer. For at least these reasons, this ground of rejection must be withdrawn.

2. Claims 6-8 and 12 Are Patentable Over Nesbitt and Horiuchi in View of Sullivan '814

Claims 6-8 and 12 were argued as being obvious over the above-noted patents to Nesbitt and Horiuchi, and further in view of U.S. Patent 4,884,814 to Sullivan.

Claim 6 recites a golf ball wherein the outer layer comprises a low flexural modulus ionomer resin which includes a blend of a hard high modulus ionomer with a soft low modulus ionomer. The high modulus ionomer is a sodium, zinc, magnesium or lithium salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms. The low modulus ionomer is a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms.

Claim 7 recites the golf ball of previously noted claim 6 wherein the outer layer composition includes 90% to 10% by weight of the hard high modulus ionomer resin and about 10% to 90% by weight of the soft low modulus ionomer resin.

Claim 8 recites the golf ball of claim 6 wherein the outer layer composition includes 75% to 25% by weight of the hard high modulus ionomer resin and about 25% to about 75% by weight of the soft low modulus ionomer resin.

Independent claim 12 recites a multi-layer golf ball comprising a core, an inner cover layer molded over the core to form an intermediate ball, and an outer cover layer molded over the intermediate ball to form the multi-layer golf ball. Claim 12 further recites the inner cover layer comprising an ionomeric resin including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi. Claim 12 further recites the outer layer comprising a blend of (i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, and (ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, methacrylic or acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms. Claim 12 further recites that the outer cover layer has a modulus in the range of from about 1,000 to about 30,000 psi.

Claims 6-8 and 12 were rejected based upon the previously noted (and deficient) '193 patent to Nesbitt and the '739 patent to Horiuchi et al., in view of U.S. Patent 4,884,814 to Sullivan. The '814 patent to Sullivan fails to remedy the deficiencies of the previously noted '193 patent to Nesbitt. Specifically, the '814 patent to Sullivan is directed to a golf ball having a single cover layer. Accordingly, it does not describe the numerous aspects and combinations of aspects of the multi-layer golf balls recited in claims 6-8 and 12. For at least these reasons, this ground of rejection must be withdrawn.

B. Claim 1 Has Been Amended, Thus Rendering the "Same Invention" Rejection Moot

Claim 1 of this application was alleged to recite the "same invention" as claim 1 of Applicant's U.S. Patent 6,368,237. Applicants appreciate the careful review of this application, and acknowledge the correctness of the Examiner's review. Accordingly, claim 1 from the present application has been amended in order to surpass this difficulty.

C. Claims 1-13 Are Patentable Over the Claims of the '831 Patent

It was further argued that claims 1-13 of the present application were unpatentable over the claims of Applicant's U.S. Patent 5,803,831. Specifically, the Examiner alleged:

Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent No. 5,803,831. Although the conflicting claims are not identical, they are not patentably distinct from each other because removal of the additionally claimed limitations of the '831 claims with their corresponding loss of function would have been obvious to one of ordinary skill in the art.

A Terminal Disclaimer is enclosed herewith that is believed to overcome this ground of rejection.

D. Conclusion

In view of the foregoing, it is respectfully submitted that all claims 1-13, as amended, are in condition for allowance.

Respectfully submitted,

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Version Showing Changes Made

Kindly amend claims 1 and 9-13 as follows:

1. (Amended) A golf ball comprising:

a core;

an inner cover layer molded on said core, the inner cover layer comprising a high acid ionomer including [at least] greater than 16% by weight of an alpha, beta-unsaturated carboxylic acid; and

an outer cover layer molded on said inner cover layer, said outer cover layer comprising a relatively soft polymeric material selected from the group consisting of low flexural modulus ionomer resins and non-ionomeric [thermoplastic] elastomers.

9. (Amended) A golf ball according to claim 1 wherein the non-ionomeric [thermoplastic] elastomer is a [polyester] polyurethane.

10. (Amended) A golf ball according to claim 1 wherein the non-ionomeric [thermoplastic] elastomer is a polyester elastomer.

11. (Amended) A golf ball according to claim 1 wherein the non-ionomeric [thermoplastic] elastomer is a polyester amide.

12. (Amended) A multi-layer golf ball comprising:

a spherical solid core;

an inner cover layer molded over said spherical solid core, said inner cover layer comprising an ionomeric resin including [at least] greater than 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

an outer cover layer molded over said [spherical intermediate ball] inner cover layer to form a multi-layer golf ball, the outer layer comprising a blend of i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, and ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms,

methacrylic or acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

13. (Amended) A multi-layer golf ball comprising:

a spherical solid core;

an inner cover layer molded over said spherical core to form a spherical intermediate ball, said inner cover layer comprising an ionomeric resin including about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a non-ionomeric [thermoplastic] elastomer selected from the group consisting of polyester elastomer, [polyester] polyurethane and polyester amide, said outer cover layer,

Forby

